

# PATENT COOPERATION TREATY

## PCT

### INTERNATIONAL PRELIMINARY EXAMINATION REPORT (PCT Article 36 and Rule 70)



REC'D 29 NOV 2004

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| Applicant's or agent's file reference<br>29071PCX270  |  | <b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416) |  |
| International application No.<br>PCT/NZ 03/00173  | International filing date (day/month/year)<br>06.08.2003 | Priority date (day/month/year)<br>06.08.2002   |  |
| International Patent Classification (IPC) or both national classification and IPC<br>E02F3/96 |  |  |  |
| Applicant<br>WARD, Simon, Robert  |  |  |  |

1. This International preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36:
2. This REPORT consists of a total of 6 sheets, including this cover sheet.  
  
☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).  
  
 These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:
  - I ☒ Basis of the opinion
  - II ☐ Priority
  - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
  - IV ☐ Lack of unity of invention
  - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
  - VI ☐ Certain documents cited
  - VII ☐ Certain defects in the international application
  - VIII ☐ Certain observations on the international application

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|---|--|
| Date of submission of the demand<br><br>19.02.2004  | Date of completion of this report<br><br>25.11.2004  |
| Name and mailing address of the international preliminary examining authority:<br><br> European Patent Office<br>D-80298 Munich<br>Tel. +49 89 2399 - 0 Tx: 523656 epmu d<br>Fax: +49 89 2399 - 4465 | Authorized Officer<br><br>Laurer, M<br><br>Telephone No. +49 89 2399-7079<br><br> |

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/NZ 03/00173**

**1. Basis of the report**

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17))*):

**Description, Pages**

1, 2, 4-13 as originally filed  
3 filed with telefax on 30.09.2004

**Claims, Numbers**

1-20 filed with telefax on 30.09.2004

**Drawings, Sheets**

1/2-2/2 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).  
☐ the language of publication of the international application (under Rule 48.3(b)).  
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.  
☐ filed together with the international application in computer readable form.  
☐ furnished subsequently to this Authority in written form.  
☐ furnished subsequently to this Authority in computer readable form.  
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.  
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:  
☐ the claims, Nos.:  
☐ the drawings, sheets:

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**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. **PCT/NZ 03/00173**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

*(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)*

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

|                               |             |     |
|-------------------------------|-------------|-----|
| Novelty (N)                   | Yes: Claims | 2   |
|                               | No: Claims  | 1   |
| Inventive step (IS)           | Yes: Claims | 2   |
|                               | No: Claims  |     |
| Industrial applicability (IA) | Yes: Claims | 1-2 |
|                               | No: Claims  |     |

**2. Citations and explanations**

**see separate sheet**

**Re Item V**

Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement;

**1 Clarity**

- 1.1 The features of the claims should be provided with reference signs placed in parentheses to increase the intelligibility of the claims (Rule 6.2(b) PCT).
- 1.2 Claim 20 contains references to the description and/or the drawings. According to Rule 6.2(a) PCT, claims should not contain such references except where absolutely necessary, which is not the case here (see the PCT-Guidelines section IV, chapter III-4.10).
- 1.3 The dependence of claim 2 to claim 1 is unclear, because claim 1 does not mention a "consecutive closing".
- 1.4 In claim 1 an attempt has been made to define the invention by the result to be achieved, reflecting the underlying technical problem (Guidelines Section IV; III-4.7).
- 1.5 Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the documents US-A-5183216 (=D1) and US-A-6129298 (=D2) is not mentioned in the description, nor are these documents identified therein.
- 1.6 The formulation of the independent claim does not comply with Rule 6.3 PCT, because the features known from the prior art (D1) are not placed in the preamble of such a claim.

**2 Novelty and inventive step**

- 2.1 In the terms of independent claim 1 US-A-5183216 (=D1) shows in figures 1 to 4 a cutting or crushing implement (1) comprising:  
a plurality of sets of jaws (15-21; *D1 mentions working ledges of the jaws which represent the jaws of the current application as described*) each set of jaws including opposing upper (15, 16, 17, *see figure 3*) and lower (18, 19, 20, 21, *see figure 3*) jaws which are pivotable about and displaced along an axis (9, *of Figure 2*; *in Figure 3 it can be clearly seen that the upper jaws 15, 16, 17 are fixed to the*

*support 7 and the lower jaws 18, 19, 20, 21 are fixed to support 8, both supports 7 and 8 are pivotable about the common axis 9 and so are the upper and lower jaws; the common pivot axis 9 is oriented parallelly to the dash-dotted lines in figure 3; Thus, the sets of jaws are "positioned side by side and are pivotable about and displaced along the common axis" 9),*

wherein

*adjacent upper (15, 16, 17) and lower (18, 19, 20, 21) jaws are displaced relative to one another about said axis (9, see figure 3 of D1, wherein the displacement of adjacent jaws can be seen) so that when operated the sets of jaws are together adapted to cut or crush a single length of material at a plurality of separate points (as can be seen in figure 3 of D1, the material between the jaws will be crushed at a plurality of points) along the length of said material (between eg jaws 18-21), and whereby a single actuation (see actuator 10) of said implement is capable of causing each of said sets of jaws (15-21) to at least partially close in sequence (the sequence in D1 can be seen in D1, figure 3 wherein a piece extending between the left and right lower jaws 24 will first be held and crushed by the middle upper jaw (16, 22) and in a second step will be crushed between the adjacent sets of jaws from the inner part to the outsides relative to the middle jaw (16, 22)).*

All the features of current claim 1 are known from D1. Thus, claim 1 does not comply with Article 33(1)(2) PCT.

The claimed subject-matter is not novel over US-A-6129298 (=D2, see figure 4).

- 2.2 Moreover, a lack of unity "a posteriori" ensues for the thereon directly depending claims 2-6, 9-19 addressing different technical features having different technical effects for solving different objective technical problems.
- 2.3 The clarified subject-matter (see paragraph 1.3) of the dependent claim 2 wherein "a consecutive closing of adjacent sets of jaws places a first set of jaws in a cutting or crushing configuration and a second immediately adjacent set of jaws in a substantially clamping configuration" is defined, is neither known from nor rendered obvious by the available prior art (Article 33 PCT).  
The technical effect resulting from the features of claim 2 can be summarised as:  
Coordinated crushing of an elongate piece between a jaw crusher;  
The objective technical problem could be formulated as:  
Improving the cutting process in a jaw crusher.  
The available prior art documents, such as D2, do not show or suggest a

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consecutive closing of adjacent sets of jaws wherein immediately adjacent sets of jaws first clamp and then cut consecutively during the movement of the crushing implement.

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understood that, although a number of prior art publications are referred to herein, this reference does not constitute an admission that any of these documents form part of the common general knowledge in the art, in New Zealand or in any other country.

It is acknowledged that the term 'comprise' may, under varying jurisdictions, be attributed with either an exclusive or an inclusive meaning. For the purpose of this specification, and unless otherwise noted, the term 'comprise' shall have an inclusive meaning - i.e. that it will be taken to mean an inclusion of not only the listed components it directly references, but also other non-specified components or elements. This rationale will also be used when the term 'comprised' or 'comprising' is used in relation to one or more steps in a method or process.

It is an object of the present invention to go at least some way towards addressing the foregoing problems or to at least to provide the industry with a useful choice.

Further aspects and advantages of the present invention will become apparent from the ensuing description which is given by way of example only.

#### DISCLOSURE OF INVENTION

According to one aspect of the present invention there is provided a cutting or crushing implement comprising:

a plurality of sets of jaws, each set of jaws including opposing upper and lower jaws which are positioned side by side and are pivotable about and displaced along a common axis, wherein adjacent upper and/or lower jaws are displaced relative to one another about said axis so that when operated the sets of jaws are together adapted to cut or crush a single length of material at a plurality of separate points along the length of said material, and whereby a single actuation of said implement is adapted to cause each of said sets of jaws to at least partially close in sequence.

**CLAIMS:**

1. A cutting or crushing implement comprising:

a plurality of sets of jaws, each set of jaws including opposing upper and lower jaws which are positioned side by side and are pivotable about and displaced along a common axis,

wherein adjacent upper and/or lower jaws are displaced relative to one another about said axis so that when operated the sets of jaws are together adapted to cut or crush a single length of material at a plurality of separate points along the length of said material, and whereby a single actuation of said implement is adapted to cause each of said sets of jaws to at least partially close in sequence.

2. A crushing or cutting implement as claimed in claim 1, wherein the consecutive closing of adjacent sets of jaws places a first set of jaws in a cutting or crushing configuration and a second immediately adjacent set of jaws in a substantially clamping configuration.

3. A cutting or crushing implement as claimed in any one of the preceding claims, wherein said sets of jaws are adapted to pivot closed to complete a cutting, crushing or shearing operation.

4. A cutting or crushing implement as claimed in any one of the preceding claims, wherein a single actuation of the implement is capable of causing all of the sets of jaws to close.

5. A cutting or crushing implement as claimed in any one of the preceding claims, which is configured to be actuated through the operation of a hydraulic ram associated with machinery to which the implement is attached.

6. A cutting or crushing implement as claimed in any one of the preceding claims, wherein the sets of jaws are all adapted to pivot about a single common axis to at least partially close.



7. A cutting or crushing implement as claimed in claim 6 wherein one jaw from each set of jaws is fixed relative to a common pivot axis
8. A cutting or crushing implement as claimed in claim 6, wherein each of the jaws fixed relative to the common pivot axis are fixed at a different angle about the axis
- 5 9. A cutting or crushing implement as claimed in any one of the preceding claims, wherein each set of jaws is formed by two opposing jaws elements which are adapted to move together to cut, crush, crack or shear a length of material.
- 10 10. A cutting or crushing implement as claimed in any one of the preceding claims, wherein the plurality of sets of jaws are adapted to each execute a separate cut through a length of material in a single actuation of the implement.
11. A cutting or crushing implement as claimed in any one of the preceding claims, wherein each of the sets of jaws are adapted to close at separate positions along the length of the material.
12. A cutting or crushing implement as claimed in any one of the preceding claims, further including a jaw displacement system adapted to modify the distance between adjacent jaws.
- 15 13. A cutting or crushing implement as claimed in any one of the preceding claims, wherein each jaw set is formed from two opposed V-shaped jaw elements.
14. A cutting or crushing implement as claimed in any one of the preceding claims, wherein each jaw includes at least one blade, wherein each blade incorporates a leading edge.
- 20 15. A cutting or crushing implement as claimed in claim 14, wherein the leading edge of each blade is oriented opposite to a leading edge of an immediately adjacent jaw's blade or blades.

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16. A cutting or crushing implement as claimed in any one of the preceding claims, which is configured to connect to machinery adapted to operate the implement.
17. A cutting or crushing implement as claimed in any one of the preceding claims, which is adapted to connect to the actuator arm of an excavator.
- 5 18. A cutting or crushing implement as claimed in any one of the preceding claims, which are adapted to cut, crush, crack or shear a variety of different types of material.
19. A cutting or crushing implement as claimed in any one of the preceding claims, which includes a driving ram adapted to operate in conjunction with the excavator to pivot top portions of the sets of jaws about a single common axis to close the jaws and complete  
10 a cutting operation.
20. A cutting or crushing implement substantially as herein described with reference to and as illustrated by the accompanying drawings and/or examples.